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To: Ms. Marlene H. Dortch, Secretary
Federal Communications Commission (FCC)
445 12th Street, SW
Washington, DC 20554

Date: March 7, 2014

Submitted By: Secretary Lori Flanery

Re: Connect America Fund, WC Docket No. 10-90, Expression of Interest

Introduction and Background

This Expression of Interest is being submitted on behalf of the Commonwealth of Kentucky and a consortium of state leaders to outline the Commonwealth's interest in being a non-traditional participant in the Federal Communications Commission's (FCC) Connect America rural broadband experiments. Funding assistance will be sought for planning, organizing, deploying and supporting a statewide high-capacity, high-speed fiber optic network focused on the provisioning of middle mile and last mile services. Wireless technologies will also be leveraged, when needed.

The consortium, representing key stakeholders, has been at work since mid 2013 to develop the vision, business rationale, leadership structure and funding recommendations for the initiative, which is called the **Next Generation Kentucky Information Highway (Next Gen KIH)**. This initiative is working in close conjunction with the Center for Rural Development (CRD) and the "S.O.A.R.: Shaping Our Appalachian Region" initiative created by U.S. Congressman Hal Rogers and Governor Beshear. U.S. Congressman Rogers and the CRD are focused on providing high-capacity and high-speed internet access to one of Kentucky's most underserved areas, Eastern Kentucky. It is anticipated CRD may also submit an Expression of Interest. Initial funding for this initiative will be provided by the Commonwealth, federal programs, (e.g., First Net, Next Generation 911, Appalachian Regional Commission Grants), and potential public private partnerships.

Next Gen KIH will provide last mile connection to key Community Anchor Institutions (CAIs) including universities, colleges, K-12 schools, libraries and rural health providers. Additional CAIs, such as public safety (First Net and NG 911), government agencies, educational television broadcast facilities and businesses, would also benefit. Finally our non-traditional approach will allow for the provision of services to traditional carriers, local municipal networks, electrical utilities and cooperatives; thereby enhancing and expanding outreach to rural Kentucky.

The Commonwealth's network will facilitate the FCC's assessment of the ability of non-traditional methods to close the gap in high-speed broadband affordability and availability in rural areas to serve citizens, constituents, and the business community. The envisioned network will cover over 3,100 fiber miles providing high-capacity and high-speed access to the targeted CAIs and will expand the availability of affordable broadband across the Commonwealth. The initiative will further spur affordable broadband by allowing local Internet service providers to connect to the initiative's open network. Key goals include:

- Increase broadband availability and usage by households, businesses, organizations and government entities, particularly in rural communities.
- Promote economic development by sharing the statewide high-speed, high-capacity, scalable IP-based network with the private sector and promoting the network in the recruitment of companies to locate in Kentucky.
- Improve access to meet or exceed minimal recommended State Educational Technology Directors Association (SETDA) goals of 1Gbps per 1000 students for connectivity for K-12.
- Create economies of scale to build and operate the network by combining the needs of all state agencies on a single physical fiber infrastructure.
- Enable services from Community Anchor Institutions to be delivered via the network to their customers.

Submitting Entity

The Executive Branch's Finance and Administration Cabinet has served as the initial focal point for the Next Gen KIH planning effort and the preparation of this Expression of Interest. The Cabinet's Deputy Secretary serves as consortium's chairperson and membership includes partner representation from:

- Higher Education
- K-12
- Public Safety
- Healthcare
- Kentucky Educational Television
- Economic Development
- Center for Rural Development
- Commonwealth Office of Broadband Outreach and Development

Service Area and Anchor Institutions

The envisioned fiber network design is presented in **Appendix 1**. Its deployment will provide high-speed, high-capacity connections at reduced costs for individuals, businesses, and the public sector organizations in all of Kentucky's 120 counties.

This fiber network can potentially impact all of Kentucky's census blocks. Specifically, it will provide next generation "last mile" connections to the following:

- 1,400 Schools
- 173 School Districts
- 78 Regional Universities and Technical Schools
- 850 Healthcare Facilities
- 120 Public Libraries

The network will be a unique collaboration of the following entities and it will connect member sites to state, national and global resources and communities, e.g. Internet2:

- Research - University of Kentucky and University of Louisville
- Education and Culture - Higher Education, K-12, Educational Television, Private Colleges, Libraries, Museums
- Economic Development - Kentucky Businesses
- Healthcare - Hospitals, Health Department and Not-for-Profit Clinics
- Public Safety - Administrative Office of the Courts, First Net (Emergency Responders, 911 Police and Fire), Homeland Security, Commercial Mobil Radio Services (CMRS)
- Local Governments – City and County Government Locations
- State Government – 9,117 Locations across the Commonwealth
- Quasi - Government Organizations - Center for Rural Development (CRD)
- Private Fiber Partners – A portion of the fiber infrastructure will be available for a private partner use
- Local Community Networks - Private or Public networks used by community anchor institutions, (libraries, museums, etc.) businesses, and citizens

Technologies to be Deployed

The Next Gen KIH will expand on the infrastructure of Kentucky's Research and Education Network (KyRON) to bring high-speed access (100Mbps to 100Gbps) to CAls throughout the Commonwealth. It will be based on standard technologies and protocols enabling integration with multiple customers and protocols and will provide a wide range of services. Last mile connectivity from the college and university nodes will utilize these same technologies.

A fiber optic cabling foundation will form the basis for the infrastructure. In locations where fiber is available, long term IRUs will be used to quickly provide service. However, fiber is not available in most of the state. The state's more populated central region has some fiber availability, leaving the other regions underserved, especially eastern Kentucky. In these areas, the Commonwealth must build out a fiber

infrastructure before providing high speed last mile connections. As part of this build out, extra capacity will be included that will be leased to other service providers, enabling improved service to these underserved areas.

A Dense Wave Division Multiplexing (DWDM) system will be implemented on the fiber optic foundation, enabling near unlimited capacity to any connected site. A DWDM system will allow for the creation of multiple, independent, and segmented wavelengths that can be used to create logical connectivity. Each wavelength could provide bandwidth ranging from 1 Gbps to 100 Gbps currently, with the ability to grow to 400 Gbps and even 1 Tbps capacity. A DWDM system is capable of providing more than 40 wavelengths on a single pair of fiber, thus providing almost unlimited capacity for growth in bandwidth.

The DWDM systems will give the Commonwealth the ability to create multiple and totally independent IP based networks within one great statewide enterprise network which will support research, education, healthcare, government, public safety, economic development, local communities, businesses, and citizens.

Ethernet and IP based technologies will be deployed on the DWDM system, allowing for further granularity and the offering of a wider range of services. These technologies are the most commonly deployed and understood technologies existing today, which will enable simple deployment.

Strategic network to network interfaces, network peering points, and commercial demarcation points will establish gateways. These gateways will be used to efficiently transfer traffic with ILEC, CLEC, CATV, municipal cooperatives, as well as other state, regional, and national backbones.

Service Offerings

Envisioned services include the following:

- Backup
- DRM
- Cloud services
- Identification federation
- TV
- OD Video
- Distance Learning
- Government Services

State and Local Participation

As outlined in the Service Area and Anchor Institutions section, there will be wide participation and use of the Next Gen KIH network by the public sector. A strong shared governance oversight group will also be implemented to ensure quality service levels and affordability for all network customers.

Funding Request and Program Financials

Due to the planned statewide deployment and the number and diversity of stakeholder needs, the Commonwealth plans to request one-time and continuing funding over the life-cycle of the Connect America Grant. The funding request by year would be as follows:

- Year one - One time funding of \$126,000,000
- Years two through ten - Continuing funds of \$2,000,000 (each year)
Years 5 & 10 - Continuing funds for refresh of \$10,000,000 (each year)

Total Request	\$164M
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| • Year One Funding | \$126M |
| • 2 Refresh Cycles | \$20M |
| • 9 Continuing Funds Cycles | \$18M |

Closing and Contacts

The Commonwealth greatly appreciates this opportunity to express our interest in this grant opportunity and looks forward to the opportunity to formally prepare a detailed proposal for funding to support our efforts with the Next Gen KIH program.

If there are questions or concerns about this letter or the details provided, please contact Lori H. Flanery at 502 564 4240 or lori.flanery@ky.gov.

Appendix 1

Envisioned Coverage Map Representing 3100 Fiber Miles

